

CLAIMS

## WHAT IS CLAIMED IS:

1. A delivery system comprising:
  - 5 a housing;
  - a sheath;
  - a slider coupled to said sheath, said slider being located within said housing;
  - 10 an engagement plate coupled to said housing; and
  - a source of stored energy coupled to said engagement plate.
2. The delivery system of Claim 1 wherein said slider comprises a collet and a collar.
- 15 3. The delivery system of Claim 2 wherein said collet comprises a tapered surface for facilitating coupling of said collet to said engagement plate.
- 20 4. The delivery system of Claim 2 wherein said collar is an annulus slidably mounted around said sheath.
5. The delivery system of Claim 2 wherein said collet is coupled to said engagement plate.
- 25 6. The delivery system of Claim 2 wherein said engagement plate is an annular shaped member.
- 30 7. The delivery system of Claim 2 wherein said collet includes an aperture aligned with a lumen of said sheath.
- 35 8. The delivery system of Claim 2 further comprising at least one breakaway coupling said engagement plate to said housing.
9. The delivery system of Claim 8 wherein a slider movement mechanism slot of said housing ends near said at least one breakaway.

10. The delivery system of Claim 8 wherein said at least one breakaway is a mechanism that disengages said engagement plate from said housing.

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11. The delivery system of Claim 1 further comprising a braking mechanism coupled to said engagement plate.

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12. The delivery system of Claim 11 wherein said braking mechanism is selected from the group consisting of a frictional mechanism, a pneumatic mechanism and a kinetic mechanism.

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13. The delivery system of Claim 11 wherein said braking mechanism comprises an air seal between said engagement plate and said housing.

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14. The delivery system of Claim 13 further comprising one or more vent apertures allowing air to escape.

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15. The delivery system of Claim 11 wherein said braking mechanism comprises a brake plate coupled to said engagement plate and a brake wheel coupled to said housing, said brake wheel engaged with said brake plate.

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16. The delivery system of Claim 15 wherein said brake plate comprises teeth coupled to teeth of said brake wheel in a rack and pinion arrangement.

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17. The delivery system of Claim 15 further comprising a flywheel coupled to said brake wheel.

18. The delivery system of Claim 17 wherein said flywheel comprises paddles.

19. The delivery system of Claim 11 wherein said braking mechanism comprises friction pads coupled to said engagement plate, said friction pads being flexible members that press against said housing.

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20. The delivery system of Claim 1 wherein said source of stored energy comprises a spring.

21. The delivery system of Claim 20 further comprising an anchor plate coupled to said spring.

22. The delivery system of Claim 1 further comprising a stent constrained by said sheath.

23. The delivery system of Claim 22 further comprising an inner member, said stent being positioned around said inner member.

24. The delivery system of Claim 1 further comprising a slider movement mechanism coupled to said slider, said slider movement mechanism extending from inside said housing through a slider movement mechanism slot of said housing.

25. The delivery system of Claim 1 further comprising means for connecting said slider to said engagement plate.

26. The delivery system of Claim 1 wherein said slider comprises locking protrusions and said engagement plate comprises locking apertures aligned with said locking protrusions.

27. A method comprising:  
manually retracting a sheath to initiate deployment of a stent;  
connecting a slider coupled to said sheath to an engagement plate; and

disengaging said engagement plate from a housing to complete deployment of said stent.

28. The method of Claim 27 wherein upon said 5 disengagement, said engagement plate is moved by a spring.

29. The method of Claim 27 wherein upon said disengagement, said sheath is retracted automatically.

10 30. The method of Claim 27 wherein said stent self-expands upon retraction of said sheath.

15 31. The method of Claim 27 wherein said connecting comprises snapping locking protrusions of said slider to said engagement plate.

25 32. A method comprising:  
manually retracting a sheath to initiate deployment 20 of a stent;  
connecting a collet of a slider coupled to said sheath to an engagement plate; and  
disengaging said engagement plate from a housing to complete deployment of said stent.

33. A delivery system comprising:  
a housing;  
a sheath;  
a slider coupled to said sheath, said slider being 30 located within said housing;  
an anchor plate coupled to said housing; and  
a source of stored energy coupled to said slider and said anchor plate.

35 34. A method comprising:  
disengaging a slider from a housing, said slider being coupled to a sheath, wherein upon said disengaging,

a source of stored energy retracts said slider and said sheath to deploy a stent.

35. The method of Claim 34 wherein said source of  
5 stored energy is coupled to said slider and to an anchor  
plate.

36. A delivery system comprising:  
a sheath;  
10 a slider coupled to said sheath;  
an engagement plate;  
an engagement plate support member coupled to said engagement plate;  
at least one breakaway coupling said slider to said engagement plate support member; and  
a source of stored energy coupled to said slider and said engagement plate.

37. The delivery system of Claim 36 further  
20 comprising means for connecting said engagement plate to an anchor plate.

38. The delivery system of Claim 37 wherein said engagement plate comprises at least one locking  
25 protrusion and said anchor plate comprise at least one locking aperture aligned with said at least one locking protrusion.

39. A method comprising:  
30 manually retracting a slider coupled to a sheath to initiate deployment of a stent;  
connecting an engagement plate to an anchor plate,  
said engagement plate being coupled to an engagement plate support member, said engagement plate support member being coupled to said slider; and  
35 disengaging said slider from said engagement plate support member to complete deployment of said stent.

40. The method of Claim 39 wherein upon said disengaging, said slider is moved by a spring.

41. The method of Claim 39 wherein upon said disengaging, said sheath is retracted automatically.

42. The method of Claim 39 wherein said connecting comprises snapping at least one locking protrusion of said engagement plate to said anchor plate.

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43. The method of Claim 27 wherein upon said disengagement, said engagement plate is moved by a source of stored energy.

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